NRCS Natural Resources Conservation Service

RESIDUE MANAGEMENT, MULCH TILL

CONSERVATION PRACTICE JOB SHEET PA345

PRACTICE DEFINITION

Managing crop residue on a year round basis to provide an acceptable erosion rate, conserve moisture and maintain or improve soil tilth.

PRACTICE INFORMATION

This practice generally applies to cropland but may also be used on other areas where field crops are grown such as wildlife or recreation lands. Mulch tillage is a term used for non-inversion tillage such as chiseling and disking to partially incorporate crop residues left on the soil surface. As a minimum, mulch tillage includes the following:

1. Uniformly spreading the residue on the soil surface
2. Using non-inversion tillage tools that only partially incorporate surface organic material
3. Using the minimum number of passes and planning the sequence, and timing of tillage operations to maximize surface residue
4. Using planting equipment designed to operate in high residue situations
5. Minimize removal of crop residue
6. Additional criteria is provided in the practice standard and specifications contained in the NRCS Field Office Technical Guide

The benefits of this practice are significant when compared to moldboard plowing or excessive tillage using a disk or chisel plow. Soil slowly but steadily improves when erosion is reduced and organic matter increases. A constant supply of organic material left on the soil surface by a healthy population of earthworms and other organisms during decomposition improves soil tilth and increases productivity. For additional benefits described above the use of no-till planting systems should be

considered. Cover crops and crop rotation are an important part of making this system most effective.

Estimates of residue cover after machinery operations

Machine or Operator	Percent Residue Left	
	Corn/Small Grain	Soybean
Field cultivators as secondary operation:		
Duckfoot points	60-80	50-70
Sweeps or shovels 6-12”	75-85	60-75
Sweeps 12-20”	80-90	65-80
Finishing Tools:		
Soil finisher	45-65	30-50
Seedbed Conditioner	75-95	50-70
Culti-mulcher	70-90	60-70
Harrows	70-90	65-85
Drills:		
Hoe openers	50-80	40-60
Disk openers	80-90	60-80
No-till coulters	75-85	70-80
Cross slot openers	90-95	90-95
Planters: Runner planters	85-95	80-90
Double disk opener planters	80-90	70-80
Sweeps/double row cleaning disks	60-80	40-60
Ridge till planter	60-70	30-50
No-till Planters with:		
Offset double disk openers	90-95	85-95
Smooth coulter	90-95	85-95
Ripple coulter	85-90	80-90
Fluted coulter	80-85	70-80
2 or 3 fluted coulters	75-85	65-75
Anhydrous applicator	75-85	65-75
Knife-type fertilizer applicator	60-80	40-60
After Harvest*	75-95	65-90
Over winter weathering	80-95	70-80
Moldboard plow	0-10	0-5
Paraplow/Paratill	80-90	65-75
V ripper/subsoiler	70-90	60-70
Chisel plows with:		
Sweeps	65-85	35-55
Straight chisel points	55-80	30-50
Twisted points	40-60	15-35
Disk chisel plows:		
Sweeps	55-75	25-45
Straight chisel points	50-70	25-45
Twisted points	30-50	10-25
Disks:		
Offset light duty	45-55	25-35
Offset heavy duty	35-45	25-35
Tandem disk (as a secondary operation)	40-60	35-45
Tandem disk after harvest, Before other tillage	80-90	50-60
Field Cultivators as primary tillage operation		
Duckfoot points		30-50
Sweeps or shovels 6-12”		50-70
Sweeps 12-20”		55-75

Specifics of your Residue Management No-Till System is below: